

INCH-POUND

MIL-PRF-1/747E
22 July 1999
SUPERSEDING
MIL-E-1/747D
20 July 1976

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, CATHODE RAY
TYPE 3XP1

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: Electrostatic deflection and focus.

DIMENSIONS AND PIN CONNECTIONS: See figure 1.

ABSOLUTE RATINGS:

Parameter:	Ef	Ec1	ed	Eb1	Eb2	Light output	Rg	Zd	Alt
Unit:	V	V dc	v	V dc	V dc	fL	Meg	Meg	ft
Maximum:	6.9	0, -200	550	1,100	2,750	---	1.5	1.0	10,000
Minimum:	5.7	---	---	---	1,000 <u>1/</u>	20 <u>2/</u>	---	---	---
Test conditions:	6.3	Adj	---	Focus	2,000	---	---	---	---

See footnotes at end of table I.

GENERAL:

Qualification: Not required.

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TABLE I. Testing and inspection.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
<u>Qualification inspection</u>							
Pressure (implosion)	1141	---		---	---	---	---
Vibration	5111	---		Width	---	1.0	mm
Direct-interelectrode capacitance	1331	---	g1 to a11	Cg1	---	7	pF
			D1 to D2	C1D2	---	4	pF
			D3 to D4	C3D4	---	4	pF
			D1 to all except D2	CD1	---	4	pF
			D2 to all except D1	CD2	---	4	pF
			D3 to all except D4	CD3	---	4	pF
			D4 to all except D3	CD4	---	4	pF
Neck and bulb alignment (electrostatic types)	5101	---		Dia	---	1.5	Inch
Focusing voltage (zero-bias)	5246	---	Ec1 = 0	Eb1	400	---	V dc
Deflection-factor uniformity	5248	---		---	---	---	---
<u>Conformation inspection part 1</u>							
Electrode current (cathode)	5201	---	Light = 20 fL	lk	---	1,000	μA dc
Voltage breakdown	5201	---		---	---	---	---
Voltage breakdown (electrostatic types)	5201	---		---	---	---	---
Gas "cross"	5206	<u>3/</u>	Light = 20 fL	---	---	---	---
Base alignment (electrostatic types)	5101	---	+3D4; pin No. 5	---	---	---	---
Angle, bulb, and trace	---	---	+1D2; bulb wall	---	---	1.5	Degrees
Screen and faceplate blemishes	5106	---		---	---	---	---
Light output	5221	<u>2/ 3/</u>		Light	20	---	fL
Modulation	5223	---	Light = 20 fL	ΔEc1	---	38	V dc
Spot position (electrostatic deflection)	5231	---		---	---	15.0	mm
Spot displacement (leakage)	5231	---		Displ	---	7.0	mm
Grid cutoff voltage	5241	---		Ec1	---	-67.5	V dc
Grid No. 1 leakage current	5251	---		---	---	---	---
Anode No. 2 leakage current	5251	---		---	---	---	---

See footnotes at end of table.

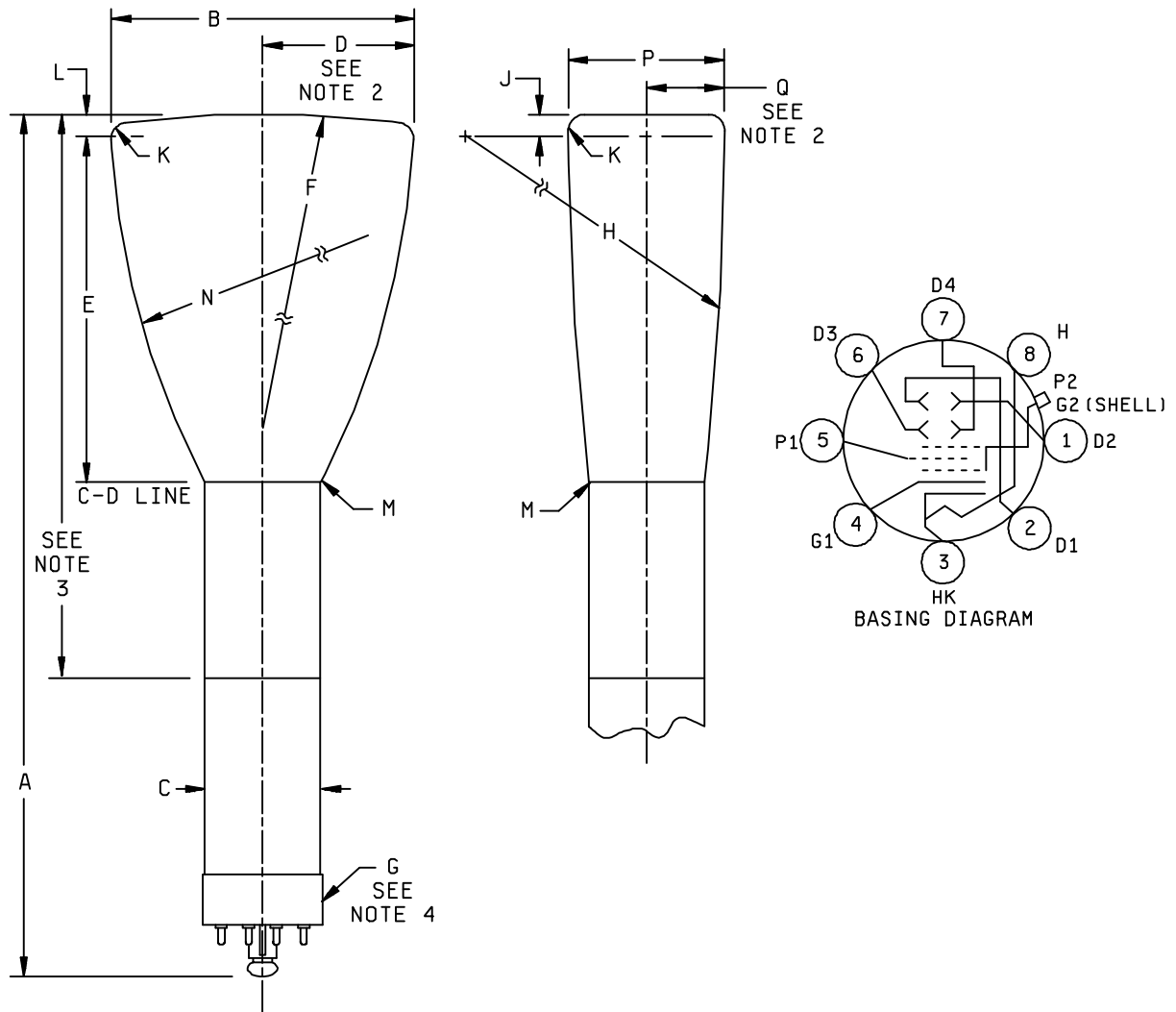
TABLE I. Testing and inspection - Continued.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
<u>Conformance inspection, part 2</u>							
Heater current	1301	---	Ec1 = 0	If	540	660	mA
Electrode current (anode No. 1)	5201	---		Ib1	-15	10	μA dc
Neck and base alignment (electrostatic types)	5101	---		---	---	---	---
Angle between traces	5101	---		---	---	---	---
Cathode illumination	5216	---		---	---	---	---
Stray light emission (conventional types)	5216	---	Eb2 = 2,750 V dc	---	---	---	---
Line width A (electrostatic deflection)	5226	---	Light = 20 fL	Width	---	0.65	mm
Line width B (electrostatic deflection)	5226	---	Light = 20 fL	Width	---	0.65	mm
Focusing voltage at cutoff	5246	---	Ec1 = cutoff	Eb1	---	700	V dc
Deflection factor	5248	---	1D2	DF	68	92	Vdc/inch
Deflection factor	5248	---	3D4	DF	28	38	Vdc/inch
Secureness of base, cap, or insert	1101	---		---	---	---	---
Permanence of marking	1105	---		---	---	---	---
<u>Conformance inspection, part 3</u>							
Life test	---	---	Group C; light = 20 fL Eb2 = 2,750 V dc; t = 500 hrs (min)	---	---	---	---
Life-test end points:	---						
Line width A	5226	---		Width	---	0.65	mm
Line width B	5226	---		Width	---	0.65	mm
Modulation	5223	---		ΔEC	---	38	V dc

1/ This value is recommended only for low-velocity deflecting and low-ambient light levels.

2/ All light dependent tests to be measured with a 1.125 inch (28.58 mm) vertical and 1.562 inch (39.69 mm) horizontal, 30-line raster. Photocell is to have a 1-inch (25.40 mm) active aperture and calibrated in foot lamberts similar to Photovolt Corporation type 200-A, or equal.

3/ This test to be performed at the conclusion of the holding period.



NOTES:

1. These dimensions are for information only and are not required for inspection purposes.
2. Useful screen.
3. This portion of the envelope shall be coated with clear-baking synthetic XS-1810, as supplied by Coating Materials Laboratories, Inc., or equal.
4. Base: D8-1 (EIA) (Except the "D" dimension of the base shell shall be modified to 1.170 (min) - 1.250 (max)).

FIGURE 1. Outline drawing of electron tube type 3XP1.

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Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Qualification inspection				
B	2.953	3.047	75.01	77.39
G	Base: D8-1 (EIA) (see note 4)			
P	---	1.516	---	38.51
Conformance inspection, part 2				
A	8.750	9.000	222.25	228.60
C	---	1.125 DIA	---	28.57 DIA
D	1.375	---	34.93	---
Q	.563	---	14.30	---
Reference dimensions (see note 1)				
E	3.879		98.53	
F	60.000 R		1524.00 R	
H	35.500 R		901.70 R	
J	.188		4.78	
K	.188 R		4.78 R	
L	.246		6.25	
M	1.000 R		25.40 R	
N	10.000 R		254.00 R	

FIGURE 1. Outline drawing of electron tube type 3XP1 - Continued.

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Custodians:

Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:

DLA - CC

Project (5960-3551-05)

Review activities:

Army - MI
Navy - CG, MC, OS
Air Force - 17, 99